WINE MAKING IN THE HOME

Richard Barton

Department of Horticulture
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Ohio Agricultural Experiment Station
Wooster, Ohio

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Wine can be made in the home by anyone who wants to take the time and effort to produce carefully controlled conditions. Procedures will differ from those used in the large wineries, but final results will be the same.

In recent years, the trend has been to name wines using the grape variety from which they are made. A wine made from Catawba grapes would be called Catawba wine. This trend will be followed here, so there will be no effort made to describe the procedure to make Port, Burgundy or other place name wines.

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THE RAW MATERIALS

Palatable wine can be made from practically any of the grapes grown in Ohio. However, the character of the wine will vary with the kind of grapes used. A brief description of some of the more important varieties is given below:

Concord - This is the most important variety of grape grown in Ohio, but it is not generally considered especially suited for wine. With proper handling an average quality red wine can be made from this grape variety. It can also be used to advantage in blending with other grapes.

Catawaba - This is an excellent white wine grape. Although it has a brilliant red color, the pigment in the skin is not readily soluble so wine made from this grape is golden in color. A long season is required to mature the fruit of this variety. It is grown with greatest success only in the Lake Erie grape region.

Delaware - This variety is used for Champagne and excellent quality golden or white wines. When fermented on the skins it produces a ligh red wine of pleasing color.

Ontario and Niagara - Good white wines can be made from both these grapes.

Due to the climate and relatively short growing season, the grapes mentioned above will have a high acid and a low sugar content. Because of the low

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sugar content, it is usually necessary to add sugar to the grape must. (crushed grapes). Otherwise, the alcohol content will be so low (7-8%) that the wine will be susceptible to spoilage.

THE EQUIPMENT NEEDED

Certain equipment is necessary for the manufacture of wine. It can be as simple or as elaborate as one desires. A great deal of it can be ordinary kitchen utensils.

Fermentation Vats - Pottery crocks of 5 to 10 gallon capacity are very good for the initial fermentation. Their big advantage is the fact that they are easy to keep clean. The most serious disadvantage is the fact that they are rather fragile. Barrels with the heads removed are also good. It is important to make sure that they are tight and clean before using. Soaking for several days will tighten them. Washing with a hypochlorite solution or burning a sulfur wick in them will aid in cleaning the barrels.

Siphon - The siphon can be a length of rubber tubing about a 1/4" in diameter and about five feet long.

Stemmers - This is a necessary piece of equipment as the grapes must be removed from the stems before fermentation begins. The stems have a high concentration of tannin (an astringent substance) and a high acid content. A workable stemmer can be made by driving many nails in a board with about an inch of the head protrudin The bunches of grapes are dragged over these nails, to separate the stems and grapes.

Crushers - The grapes may be very efficiently crushed with a hopper with fluted rolls of non-corrosive metal at the bottom. If a small quantity is to be used a potato masher can be used. To do a good job with this implement, only about a quart of grapes should be crushed at one time.

Press - An upright, hand operated press may be purchased at hardware stores or winery supply houses. If available , an ordinary cider press will also serve the purpose quite well. On a small scale, the must can be pressed by placing it in a cloth sugar sack and pressing by hand.

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Saccharometer - A weighted glass tube with a scale indicating percent of sugar, which is used to determine the percentage of sugar in the wine must. Saccharometers can be purchased at instrument stores or winery supply houses for $2-$3. If not available, a storage battery tester can be used. A specific gravity of 1.110 or the scale reading of 1110 on the tester is equivalent of 26% sugar which is about the sugar concentration desired in the must when the fermentation starts.

Water Seals - Water seals should be used to seal the barrel or carboy durin the secondary fermentation. A hole is bored into a stopper that will fit the bung hole. A length of rubber hose is inserted in this hole. The other end of the hose is inserted in a bottle or jar of water. With this seal, gas can escape from the barrel or carboy but spoilage organisims will be prevented from getting into the fermenting wine.

Utensils - At least one measuring vessel of one gallon capacity should be on hand. It is preferable to have one of stainless steel or of tin plate. It is necessary so that accurate volumes of the wine can be measured. A large funnel for transferring the wine from one container to another also is handy. This too should be of stainless steel or tin plate. Several gallon jugs are advisable to hold wine that later will be used to keep larger vessels completely filled.

Barrels - Oak barrels in sound, clean condition are commonly used for the secondary fermentation and aging. They should be set in heavy frames about eighteen inches from the floor. If they are not available, glass carboys of five gallon capacity can be used. However, the aging process will take longer in glass than in oak barrels.

WINE MAKING

The first thing to do is to pick the grapes when they are completely ripe. At this point the grapes will have developed the maximum sugar content and will have the minimum amount of acid. For the most part, grapes in this area will not produce more than 17-19% sugar. The acid content will be around one percent.

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The fermentation room and the utensils should be thoroughly cleaned. All rubbish, dirt, and dust should be removed from the fermentation room. The fermentation vats should be scrubbed with a hypochlorite solution and then rinsed with clean water. Another method is to wash the vats with clean water and then burn some sulfur in them. Either treatment will destroy any organisims that would cause spoilage of the wine.

As the initial operations for making both red and white wine are the same, they will be described at this point. The first operation is to sort and stem the grapes. Any rotten or moldy grapes must be removed. The steming operation is necessary as the stems contain too high a concentration of tannin and other astrigent materials. The stemmer made of the board containing the nail heads can be used to great advantage here. As some juice may be liberated, it is well to have the end of the board resting in a deep pan in which both the grapes and the juice may be caught. After all the grapes have been stemmed, they are then crushed.

The sugar content of the must should next be determined. This is done by taking some of the juice from the crushed grapes and placing it in a long thin cylinder. The sugar content of the must is then read off the scale on the spindle of the saccharometer. Record the sugar content of the must.

RED WINE

To make red wine it is necessary to start with red or blue grapes. The must can be either a single variety or a blend of two or more. The fermentation process is simple and with proper handling of the must, good wine can be obtained.

Natural fermentation - This method is the one that has been used for centuries The stemmed grapes are crushed and placed in a fermentation vat. The vat should not be filled more than three quarters full as during the fermentation the mass will expand and completely fill the vat. A piece of cheesecloth should be tied over the vat to protect the must from flies. Remove this cloth twice a day and with a downward movement mix the cap of seeds and skins which will rise to the top of the must. This is necessary to prevent spoilage starting in this cap; permits fermenting gases

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to escape; cools the must and extracts the color which is present in the skins. The temperature of the fermenting must has to be kept below 85 degrees Farenheit. At higher temperatures, the type of fermentation will be undesirable. At 100 degrees Farenheit, the yeast will be killed.

This first part of the fermentation will take three or four days. The completion of this part of the fermentation can be determined when the cap of seeds and skins starts to sink and when the snapping sound can no longer be heard.

The must is now ready for the secondary fermentation. Remove the must from the fermentation vat and place it in the press. Press the must from the skin and seeds which can be discarded. Measure the volume of must. It is necessary to know the volume of must in order to add the correct amount of sugar.

When all the wine has been pressed out of the must, the proper amount of sugar should be added. It has been found that when the sugar concentration is adjusted to 26% sugar, the alcohol content of the wine will be around 13-14%. At this percentage alcohol, the wine will age with little danger of spoilage. To determine the proper amount of sugar to add to the partially fermented must, subtract the initial sugar content of the unfermented juice from 26 percent. The difference will be the percentage of sugar to be added to the must. One pound of sugar will raise the sugar content of one gallon of must 9 percent. Mix the sugar and wine thoroughly and fill the barrels or glass carboys about three quarters full with the wine. Then attach the water seal to the barrel or carboy. Soon bubbles of gas will be seen escaping from the water. These bubbles will be forced out as long as the fermentation is in progress. It will continue for about ten days to two weeks. Three or four weeks after the completion of the fermentation, enough sediment will have settled to allow the first racking to be done. The wine is then ready for aging. As the aging procedure is similar for all types of wine it will be discussed separately.

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WHITE WINE

White wine can be made from either white, red, or blue grapes. If white grapes are used, the procedure is the same as for making red wine. If red or blue grapes are used only the initial treatment is different.

After the colored grapes are picked, the moldy and rotten ones are removed. Then they are immediately crushed and pressed with stems attached. This is a job that calls for great expenditure of physical labor. The fresh grapes are extremely slippery and hard to press. It will be impossible to extract all the juice on the first pressing. To extract more juice, the pomace should be removed from the press, stirred up and pressed again. The juice will be practically colorless. Any remaining color will be removed during the fermentation process.

After the juice has been extracted, it's sugar content should be determined and brought up to 26% sugar. Barrels or glass carboys should be filled about three quarters full with the must. If a greater volume is placed in the container the foam caused by the fermentation process will overflow the container. Seal the container with a water seal. This will exclude any undesirable organisms from the must. The remainder of the fermentation procedure is the same as for red wine.

AGING PROCESS

When the fermentation process is completed the wine will have an astringent unpleasant taste. Because of this taste, it is necessary to age the wine. During the aging period, the alcohol will blend with the other constituents and substances known as esters will form. These esters are largely responsible for the mellow smoothness of properly aged wines.

As indicated above, about three or four weeks after the fermentation is complete the wine is ready for the first racking. To rack the wine, the siphon tube is inserted into the fermentation vat to a point about an inch above the sediment which will have settled to the bottom. The wine above this is siphoned into clean, sound oak barrels or five-gallon glass carboys. The barrels or carboys are completel

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filled with the wine and then tightly sealed. One or two gallon carboys, depending on the amount of wine to be aged, should be also filled with the new wine and sealed. This will be necessary to replace wine lost by evaporation and racking in the larger containers. The wine should be kept in complete darkness to protect the color. Once every six months, the wine should be racked. The wine should be aged at least two and preferably three years before using. The longer it is aged the better it will be. At the end of this period, the wine should be clear and sparkling and mellow tasting. It is then ready for bottling. Siphon the wine into bottles and seal with either crown caps or good quality corks which have been soaked in a mixture of glycerine and hot water for an hour.

SWEET WINES

The wines made as indicated above will be quite dry - this is, there will be practically no sugar present in the final product. If a sweet wine is desired, sugar can be added to the final product. When the aging process is complete, add sugar to the wine and thoroughly dissolve. Bottle the wine and insert the corks very loosely in the mouths of the bottles to prevent the escape of some of the bouquet. If the corks are inserted tightly, they will be blown out during the pasteurizing operation. Pasteurize the sweetened wine immediately by placing in a water bath at a temperature of 160° F and holding it for 30 minutes. Cork tightly and cool the wine. If the wine is not pastuerized, the yeast in the wine will start to ferment the added sugar. One cup of sugar to a gallon of wine will raise the sugar content to 6 percent. The wine will have the sugar content of sweet Sherry wine.

NATURAL FORTIFIED FERMENTATION

A wine of 16-18% alcohol content may be made by natural fermentation. The grapes are handled as for ordinary fermentation. The sugar content is increased to 26% and the must allowed to ferment. When the must tests about 0-1% sugar, add enough sugar to increase the sugar content 4%. Repeat this procedure until the fermentation ceases. The final addition of sugar should be gauged to give the

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desired sugar content in the finished wine. Wine made in this way will take considerably longer to age than one of lower alcoholic content. But if a fortified wine is desired it is worth the extra aging.

FRUIT WINES

Good wines can be made from fruits other than grapes. The organisms responsible for the fermentation and the general procedure is the same as for making grape wines. The procedure for making various fruit wines is described below.

Sour Cherries - The stems and any spoiled fruit and seeds are removed and the cherries are crushed. An equal weight of water is mixed with the crushed fruit. Allow it to ferment for two or three days. Then press the juice out and add a pound and a half of sugar to each gallon of must. Continue the fermentation under a water seal. The rest of the procedure is the same as for grape wine. It should be ready to drink in 3-6 months.

Elderberries - The berries are removed from the stems and crushed. An equal weight of water is mixed with the crushed fruit. The sugar content is made up to 21-22%. Ferment for about four days. Draw off the free run juice. Press the rest out and mix both the free run and pressed juice and continue the fermentation under a water seal. The finished wine should be ready to bottle in 3-6 months.

Other Berry Wines - Much the same procedure is used for ohher berries. Raspberries yield considerable juice on crushing and fermenting, black raspberries will produce a deeper colored wine than will red raspberries. Red currants require considerable dilution before fermenting because of their high acidity, about 1.1 dilution with water is advisable.

Use of Pure Yeast Starters

Normally, the proper fermentation organisms will be present on the fruit in large enough quantities to insure fermentation. However, for elaborate procedures pure yeast starters can be used. These starters may be obtained from the Berkeley Yeast Laboratory, Berkeley, California. Sterilized juice is added to the starter and where fermentation has started, the mixture is added to the crushed fruit.

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To get maximum benefit from pure starters, sodium bisulfite or potassium metabisulfite is added to the crushed fruit 24 hours before adding the starter to kill any undesirable organisms present. One quarter of a teaspoon of bisulfite per gallon of juice will be a large enough quantity to do the job.

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